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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,884	08/28/2001	Joan Manuel Garcia	60003206-1	7849

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
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EXAMINER

NGUYEN, LAM S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/941,884	Applicant(s) GARCIA ET AL.	
	Examiner LAM S. NGUYEN	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 20-22 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 and 11 is/are allowed.
- 6) ☒ Claim(s) 1,3-10,12-18 and 20-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3-5, 10, 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich et al. (US 6137592) in view of Dunand (US 6398334).

Referring to claims 1, 3-4, 10, 13:

Arquilevich et al. discloses a diagnostic method for visual detection of poor media advance calibration in an ink-jet printing system (*column 3, lines 32-42*) (**Referring to claims 4, 13**), comprising:

entering a diagnostic mode of the printing system in which mode normal printing jobs of the printing system are not printed (*column 6, lines 20-45: The print controller causes a test plot to be printed onto the media sheet to perform the calibration process*);

printing different areas of a diagnostic pattern at different passes of one or more ink-jet printheads with a controlled amount of media advances between the passes between the printing of the different areas, wherein said different areas are nominally aligned along a horizontal line and said printing different areas of a diagnostic pattern performed without any intervening printing of a normal print job (**Referring to claims 3, 12**) (*FIG. 5 and column 6, lines 35-45*).

Arquilevich et al., however, does not teach examining the diagnostic pattern conducted by an optical sensor to determine whether an accumulate media advance error is sufficiently objectionable to take corrective action.

Dunand teaches examining a diagnostic pattern formed by an ink jet printing system to determine whether an accumulate media advance error is sufficiently objectionable to take corrective action (*column 10, line 22-26: If the accumulated advance error reaches a half of a nominal advance, the program will choose to use the reference mark to print the next band*), wherein the step of examining the diagnostic pattern is conducted by an optical sensor (*column 7, lines 39-42*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the method disclosed by Arquilevich et al. to include determining whether an accumulate media advance error is sufficiently objectionable to take corrective action as disclosed by Dunand.

The motivation of doing so would have been to correct misalignment defects caused by the differences between the real advance of the printing medium and its nominal advance as taught by Dunand (*column 1, lines 8-10*).

- **Arquilevich et al. also discloses the following claimed invention:**

Referring to claims 10, 13: providing an ink-jet printhead mounted on a carriage, the carriage mounted for movement along a scan axis and providing a media advance system for advancing a print medium along a media path which is transverse to the scan axis (*FIG. 2*).

2. Claims 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich et al. (US 6137592) in view of Dunand (US 6398334), as applied to claims 1 and 10, and further in view of Maeda et al. (US 6334659).

Arquilevich et al., as modified, discloses the claimed invention as discussed above except that wherein said step of printing different areas of a diagnostic plot includes: applying a diagnostic multi-pass print mode mask, wherein a plurality of carriage passes are employed to print the area subtended by a printhead nozzle array, the diagnostic print mode mask comprising a rectilinear grid of pixels, with each pixel location having a number associated therewith, the number representing the pass in which the pixel will be printed, and wherein said different areas nominally aligned along a horizontal line include a first set of pixels on a row of said grid, and a second set of pixels on said row, and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed.

Maeda et al. discloses that wherein said step of printing different areas of a diagnostic plot includes: applying a diagnostic multi-pass print mode mask, wherein a plurality of carriage passes are employed to print the area subtended by a printhead nozzle array (*FIG. 7A*), the diagnostic print mode mask comprising a rectilinear grid of pixels (*FIG. 10*), with each pixel location having a number associated therewith (*FIG. 10*), the number representing the pass in which the pixel will be printed, and wherein said different areas nominally aligned along a horizontal line (*FIG. 10C: areas printed by #1 pixel and #3 pixel are aligned along a horizontal line*) include a first set of pixels on a row of said grid, and a second set of pixels on said row (*FIG. 10C: the #1 pixel set is on the same row with the #3 pixel set*), and wherein said first set of

pixels is printed on a different pass than said second set of pixels is printed (*FIG. 10C: the #1 pixel set and #3 pixel set are printed on the different passes*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to include the applying of a diagnostic multi-pass print mode mask as disclosed by Maeda et al. into the advance control process as disclosed by Arquilevich et al., as modified. The motivation of doing so would have been to reduce the formed bind pitch to less than paper transport width without increasing the number of scans; thus, the banding artifacts are imperceptible as taught by Maeda et al. (*column 4, lines 4-10*).

3. Claims 8-9, 17-18, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich et al. (US 6137592) in view of Dunand (US 6398334) and Yen et al. (US 5992962).

Arquilevich et al., as modified, discloses the claimed invention as discussed above except wherein said diagnostic print mode mask defines that the first $w/2$ pixels in the row are printed in the same pass, and the last $w/2$ pixels in the row are printed in another pass, wherein said diagnostic print mode mask includes a row wherein said first $w/2$ pixels are printed in a first pass, and said last $w/2$ pixels are printed in a last pass of said plurality of passes, and the diagnostic print mode mask comprising a rectilinear grid of pixels and a row width of w pixels, and said different area include a first set of pixels on a row of said grid, and a second set of pixels on said row, and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed (**Referring to claims 8-9, 17-18, 20-21**).

Yen et al. discloses printing patterns including the first $w/2$ pixels in the row are printed in the same pass, and the last $w/2$ pixels in the row are printed in another pass, wherein said

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diagnostic print mode mask includes a row wherein said first $w/2$ pixels are printed in a first pass, and said last $w/2$ pixels are printed in a last pass of said plurality of passes (*FIG. 6*), and wherein said different areas are nominally aligned along a horizontal line (*FIG. 3*), and the diagnostic print mode mask comprising a rectilinear grid of pixels and a row width of w pixels, and said different area include a first set of pixels on a row of said grid, and a second set of pixels on said row, and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed (*FIG. 6*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the diagnostic pattern disclosed by Arquilevich et al., as modified, such as the first $w/2$ pixels are printed in a first pass and the last $w/2$ pixels are printed in a last pass of said plurality of passes as disclosed by Yen et al. The motivation of doing so would have been to eliminate unpleasant banding artifacts caused by ink migration as taught by Yen et al. (*Abstract*).

4. Claims 6, 15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich et al. (US 6137592) in view of Dunand (US 6398334) and Takagi et al. (US 6089695).

Arquilevich et al., as modified, discloses the claimed invention as discussed in the first rejection except an initial step of checking for printhead health and taking any corrective needed action to recover nozzle health prior to printing said diagnostic pattern.

Takagi et al. discloses a process in a printer in which a step of checking for printhead health is done (*FIG. 12, step S104: Test to determine if NON-DISCHARGE NOZZLE is present*)

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and taking any corrective needed action to recover health nozzle prior to printing (*Abstract: After abnormal nozzles are detected, data related to such abnormal nozzles are removed*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printing process disclosed by Arquilevich et al., as modified, such that including the step of checking printhead health and taking any corrective needed action to recover nozzle health as disclosed by Takagi et al. The motivation of doing so would have been to provide a liquid discharge apparatus capable of obtaining the desired result of discharges without any defects even when non-discharge or another malfunction occurs in the discharging means as taught by Takagi et al. (*column 3, lines 60-65*).

Allowable Subject Matter

Claims 2 and 11 are allowed: The reasons for allowance were indicated the previous office action.

Response to Arguments

Applicant's arguments with respect to all rejected independent claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S. NGUYEN whose telephone number is (571)272-2151.

The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LN
05/29/2006

 12/7/06
MANISH S. SHAH
PRIMARY EXAMINER